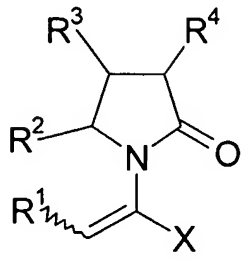
CLAIMS

1. A process for preparing a compound having formula (A)



(A)

wherein

X is -$CONR^5R^6$ or -$COOR^7$ or -$CO\text{-}R^8$ or CN;

R^1 is hydrogen or alkyl, aryl, heterocycloalkyl, heteroaryl, halogen, hydroxy, amino, nitro, cyano;

R^2, R^4 are the same or different and each is independently hydrogen or halogen, hydroxy, amino, nitro, cyano, acyl, acyloxy, sulfonyl, sulfinyl, alkylamino, carboxy, ester, ether, amido, sulfonic acid, sulfonamide, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, alkylsulfinyl, arylsulfinyl, alkylthio, arylthio, alkyl, alkoxy, oxyester, oxyamido, aryl, arylamino, aryloxy, heterocycloalkyl, heteroaryl, vinyl;

R^3 is hydrogen, halogen, hydroxy, amino, nitro, cyano, acyl, acyloxy, sulfonyl, sulfinyl, alkylamino, carboxy, ester, ether, amido, sulfonic acid, sulfonamide, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, alkylsulfinyl, arylsulfinyl, alkylthio, arylthio, alkyl, alkoxy, oxyester, oxyamido, aryl, arylamino, aryloxy, heterocycloalkyl, heteroaryl, (C2-C5)alkenyl, (C2-C5)alkynyl, azido, phenylsulfonyloxy;

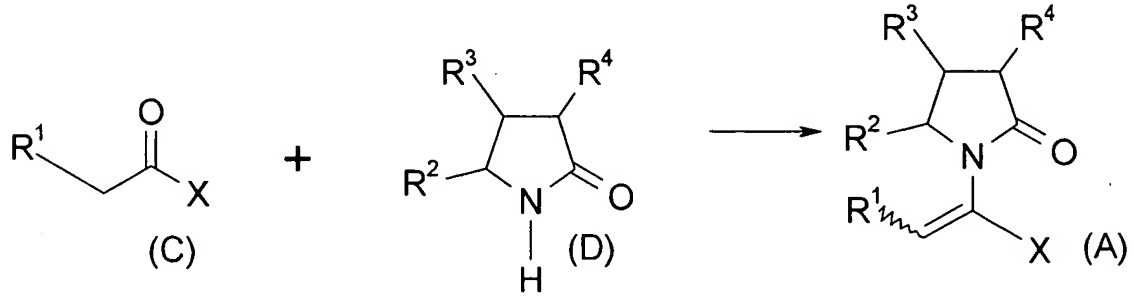
R^5, R^6, R^7 are the same or different and each is independently hydrogen, hydroxy, alkyl, aryl, heterocycloalkyl, heteroaryl, alkoxy, aryloxy; and

R^8 is hydrogen, hydroxy, thiol, halogen, alkyl, aryl, heterocycloalkyl, heteroaryl, alkylthio, arylthio;

each alkenyl, alkynyl, azido may independently be optionally substituted by one or more

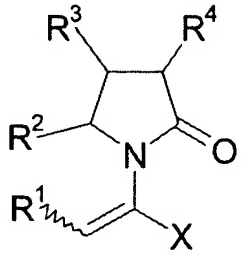
halogen, cyano, thiocyano, azido, alkylthio, cyclopropyl, acyl, phenyl;

which process comprises the reaction of an α-ketocarboxylic acid derivative of general formula (C) with a pyrrolidinone of general formula (D) according to the following Scheme (1):



Scheme (1)

2. A process for preparing a compound having formula (A),



(A)

wherein

X is -COOR^7;

R^1 is hydrogen or alkyl, aryl, heterocycloalkyl, heteroaryl, halogen, hydroxy, amino, nitro, cyano;

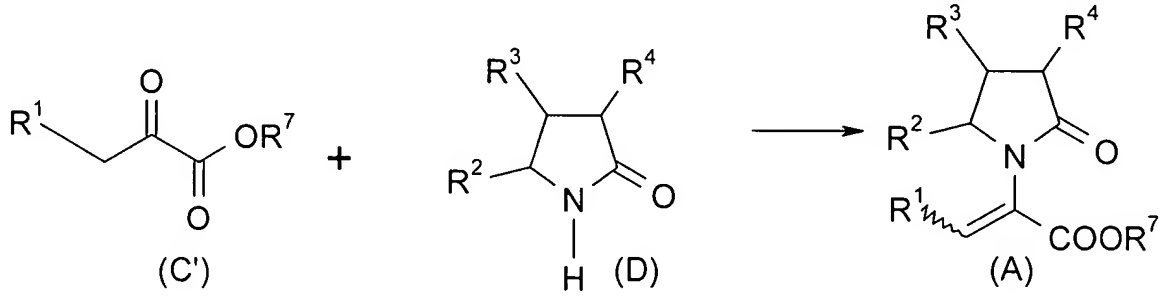
R^2, R^4 are the same or different and each is independently hydrogen or halogen, hydroxy, amino, nitro, cyano, acyl, acyloxy, sulfonyl, sulfinyl, alkylamino, carboxy, ester, ether, amido, sulfonic acid, sulfonamide, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, alkylsulfinyl, arylsulfinyl, alkylthio, arylthio, alkyl, alkoxy, oxyester, oxyamido, aryl, arylamino, aryloxy, heterocycloalkyl, heteroaryl, vinyl;

R^3 is hydrogen, halogen, hydroxy, amino, nitro, cyano, acyl, acyloxy, sulfonyl, sulfinyl, alkylamino, carboxy, ester, ether, amido, sulfonic acid, sulfonamide, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, alkylsulfinyl, arylsulfinyl, alkylthio, arylthio, alkyl, alkoxy, oxyester, oxyamido, aryl, arylamino, aryloxy, heterocycloalkyl, heteroaryl, (C2-C5)alkenyl, (C2-C5)alkynyl, azido, phenylsulfonyloxy;

R^7 is hydrogen, hydroxy, alkyl, aryl, heterocycloalkyl, heteroaryl, alkoxy, aryloxy; and

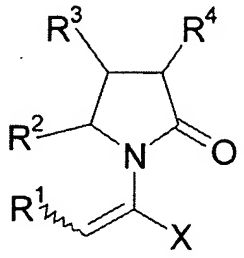
each alkenyl, alkynyl, azido may independently be optionally substituted by one or more halogen, cyano, thiocyano, azido, alkylthio, cyclopropyl, acyl, phenyl;

which process comprises the reaction of an α-ketocarboxylic acid derivative of general formula (C') with a pyrrolidinone of general formula (D) according to the following Scheme (2):



Scheme (2)

3. A process for preparing a compound having formula (A),



(A)

wherein

X is $-CONH_2$ or $-CONR^5R^6$;

R^1 is hydrogen or alkyl, aryl, heterocycloalkyl, heteroaryl, halogen, hydroxy, amino, nitro, cyano;

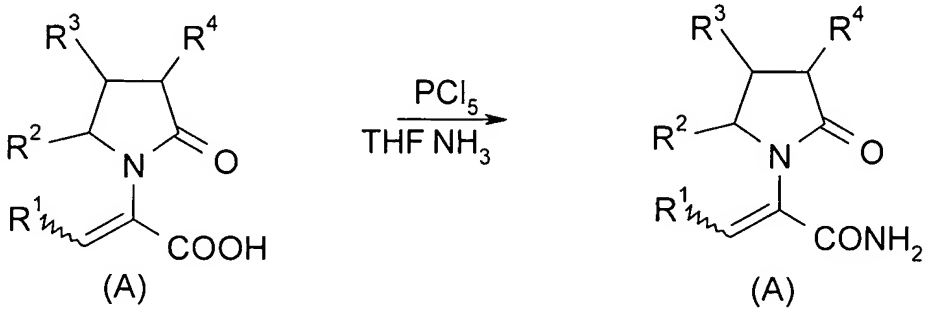
R^2, R^4 are the same or different and each is independently hydrogen or halogen, hydroxy, amino, nitro, cyano, acyl, acyloxy, sulfonyl, sulfinyl, alkylamino, carboxy, ester, ether, amido, sulfonic acid, sulfonamide, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, alkylsulfinyl, arylsulfinyl, alkylthio, arylthio, alkyl, alkoxy, oxyester, oxyamido, aryl, arylamino, aryloxy, heterocycloalkyl, heteroaryl, vinyl;

R^3 is hydrogen, halogen, hydroxy, amino, nitro, cyano, acyl, acyloxy, sulfonyl, sulfinyl, alkylamino, carboxy, ester, ether, amido, sulfonic acid, sulfonamide, alkylsulfonyl, arylsulfonyl, alkoxycarbonyl, alkylsulfinyl, arylsulfinyl, alkylthio, arylthio, alkyl, alkoxy, oxyester, oxyamido, aryl, arylamino, aryloxy, heterocycloalkyl, heteroaryl, (C2-C5)alkenyl, (C2-C5)alkynyl, azido, phenylsulfonyloxy;

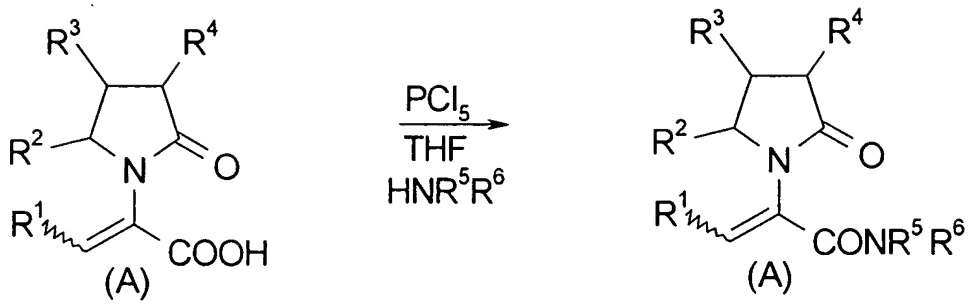
R^5 and R^6 are the same or different and each is independently hydrogen, hydroxy, alkyl, aryl, heterocycloalkyl, heteroaryl, alkoxy, aryloxy; and

each alkenyl, alkynyl, azido may independently be optionally substituted by one or more halogen, cyano, thiocyano, azido, alkylthio, cyclopropyl, acyl, phenyl;

which process comprises the conversion of an acid, where this acid is a compound of formula (A) where X is CO_2H, with the acid chloride with subsequent ammonolysis or reaction with a primary or secondary amine of the general formula HNR^5R^6 according to the following Schemes 3 or 4:



Scheme (3)



Scheme (4)

4. A process for preparing (S)-α-ethyl-2-oxo-1-pyrrolidine acetamide or (R)-α-ethyl-2-oxo-1-pyrrolidineacetamide, which comprises subjecting a compound of formula A' in the form of a Z isomer or an E isomer to asymmetric hydrogenation using a chiral catalyst according to the following scheme: